Environmental Protection
Agency

WH-552 Washington, DC 20460 December 1979

Water and Waste Management

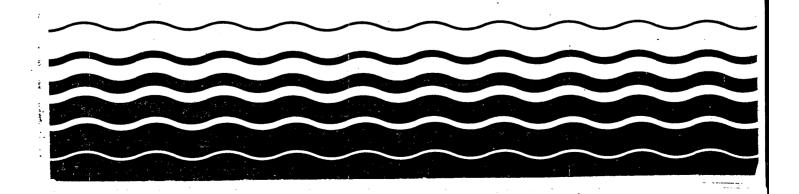
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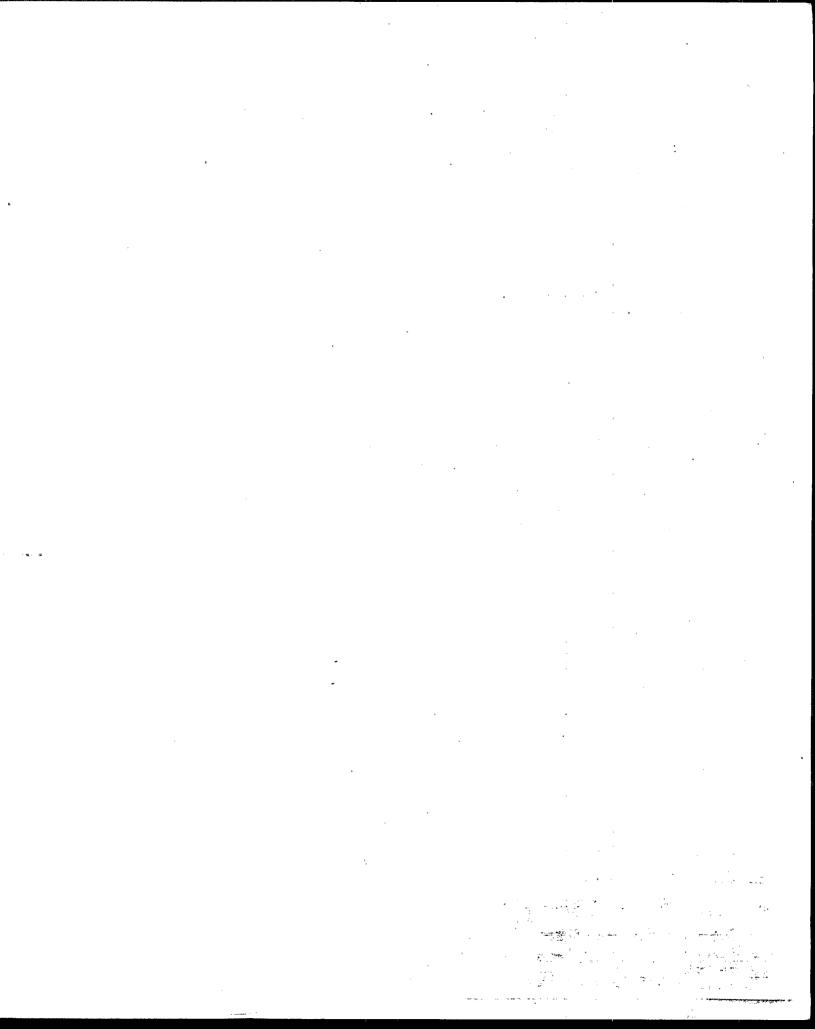
Development Draft
Document for Proposed
Effluent Limitations
Guidelines and
Standards for the

Shipbuilding and Repair

Point Source Category







DEVELOPMENT DOCUMENT FOR PROPOSED BEST MANAGEMENT PRACTICES

for the

SHIPBUILDING AND REPAIR INDUSTRY:
DRYDOCKS
POINT SOURCE CATEGORY

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BIBLIOGRAPHY

- 1. Academy of Natural Sciences of Philadelphia, "Summary of Leaching Study for Sun Shipbuilding and Dry Dock Company," Division of Limnology and Ecology, Philadephia, Pennsylvania, 1974.
- 2. Alig, Craig S., Long Beach Naval Shipyard Drydock Wastewater Discharge Study, Report 4557, Naval Ship Research and Development Center, Bethesda, Maryland, December 1975.
- 3. Automation Industries, Inc., Environmental Impact Assessment of Floating Drydocks Operated by the U.S. Navy, Vitro Laboratories Division, Silver spring, Maryland, May 1975.
- 4. Barry, Joseph N., "Staff Report on Wastes Associated With Shipbuilding and Repair Facilities In San Diego Bay," California Regional Water Quality Control Board, San Diego Region, San Diego, California, June 1972.
- 5. Birnbaum, Bruce, Experimental Grit Blasting of the U.S.S. James Monroe (SSBN 622) Aboard the U.S.S. Alamagordo (ARDM 2) at Naval Weapons Station, Charleston, South Carolina, Naval Ship Engineering Center, Hyattsville, Maryland, October, 1975.
- 6. California Air Resources Board, "Abrasive Blasting, Title 17, California Administrative Code, Subchapter 6, State of California, Sacramento, California, February 3, 1976.
- 7. California Water Resources Control Board, <u>Water Quality Control Plan for Ocean Waters of California</u>, State of California, Sacramento, California, July 6, 1972.
- 8. Chan, D.B. and Saam, Richard D., "Drydock Wastewater Treatment Study," U.S. Navy, Civil Engineering Laboratory, Construction Battalion Center, Port Hueneme, California, June 1975.
- 9. Conn, Andrew F. and Rudy, S. Lee, <u>Parameters for a Ship Hull</u>
 <u>Cleaning System Using The CAVIJETTM Cavitating Water Jet Method</u>,
 Hydronautics, Inc., Laurel, Maryland, July 1975.
- 10. Engineering-Science, Inc., Lower James River Basin Comprehensive Water Quality Management Study, Planning Bulletin 217-B, State of Virginia Water Control Boad, Richmond, Virginia, July 1974.
- 11. Engineering-Science, Inc., Pollutional Effects of Drydock Discharges, Berkeley, California, October 1973.

- 12. Hamilton Standard, Inc., <u>Draft Development Document For Effluent Limitations Guidelines and Standards of Performance for the Machinery & Mechanical Products Manufacturing Point Source Category, EPA Contract No. 68-01-2914, Washington, DC, June 1975.</u>
- 13. Huggett, R.J., <u>Analyses of Sediment and Elutriate Samples from the James River, Virginia</u>, Virginia Institute of Marine Science, Gloucester Point, Virginia, July 1975.
- 14. Huggett, R.J., Study of Channel Sediments: Baltimore Harbor, Norfolk Harbor, York Entrance Channel, Virginia Institute of Marine Science, Gloucester Point, Virginia, 1972.
- Hurst, W. Calvin and Whiteneck, L.L., An Analysis of the Impact From Completion of Yard Modernization, Todd Shipyards Corporation, Los Angeles Division, San Pedro, California, Berths 103-109, Engineering Feasibility Studies, Inc., Los Angeles, California, April 1975.
- 16. Johnson, Patricia G. and Villa, Orterio, Jr., <u>Distribution of Metals In Baltimore Harbor Sediments</u>, Technical Report 59, U.S. Environmental Protection Agency, Annapolis Field Office, Annapolis, Maryland, 1974.
- 17. Marks, Earl E., "Report on the Application and Use Experience of the VAC-ALL Grit Removal Machine," Code 971, Long Beach Naval Shipyard, Long Beach, California, 1974.
- 18. Moffatt & Nichol, Engineers, <u>Industrial Waste and Ship Wastewater</u>

 <u>Collection and Disposal Facility: Drydocks 1, 2 and 3, Long Beach</u>

 <u>Naval Shipyard</u>, Long Beach, California, November 1975.
- 19. Newport News Shipbuilding and Dry Dock Company, "EPA Survey of Wastewater Discharge from Graving #10 During the Repair and Painting of the SS Claude Conway, May 1975," Laboratory Services Report No. N-5327, Newport News, Virginia, December 5, 1974.
- 20. Partek Corporation of Houston, "Partek Liqua-Blaster TM,"
 Houston, Texas, 1976.
- 21. Pennington, J.C., untitled letter to T.B. Ray at Newport News Shipbuilding and Dry Dock Company, U.S. Environmental Protection Agency, National Field Investigations Center, Denver, Colorado, August 1974.
- 22. Price, R.A., "Texstar, Inc. Automatic Descaling Equipment Demonstration at Avondale Shipyards, Inc.," memorandum, Avondale Shipyards, Inc., New Orleans, Louisiana, June 24, 1975.

- 23. Ray, T.B., "Comments on the Draft Development Document for Machinery and Mechanical Products Manufacturers," letter to the U.S. Environmental Protection Agency, Newport News Shipbuilding and Dry Dock Co., Newport News, Virginia, August 1975.
- 24. Ray, T.B., "Water Pollution Control Plan," submitted to the State of Virginia Water Control Board as a requirement of NPDES Permit #VA 0004804, Newport News Shipbuilding and Dry Dock Co., Newport News, Virginia 1975.
- 25. Ticker, A. and Rodgers, S., Abatement of Pollution Caused by Abrasive Blasting; Status in Naval Shipyards, Report 4549, Naval Ship Research and Development Center, Bethesda, Maryland, July 1975.
- 26. Shierman, E.G., A <u>Demonstration</u> of the <u>Myers-Sherman Vactor Model</u> 700, U.S. Navy, Long Beach Naval Shipyard, Long Beach, California, 1975.
- 27. U.S. Congress, <u>Current Status of Shipyards</u>, <u>1974 Part 2</u>, hearings before the Seapower Subcommittee of the Committee on Armed Services, House of
- 28. U.S. Department of Commerce and U.S. Department of Defense, Principal Shipbuilding and Repair Facilities of the United States, Naval Sea Systems Command, Washington, DC, 1970.
- 29. U.S. Department of Defense, "Military Specification: Paint, Antifouling, Vinyl-Red (Formula No. 121/63), Military Specification MIL-P-15931B, Amendment 2, Washington, DC, April 13, 1970.
- 30. U.S. Department of Defense, "Military Specification: Primer Coating, Shipyard, Vinyl-Red Lead (Formula 119), Military Specification MIL-P-15929C, Washington, DC, October 24, 1972.
- 31. U.S. Department of the Navy, <u>Design</u> <u>Manual</u> <u>Drydocking</u> <u>Facilities</u>, DM-29, Naval <u>Facilities</u> Engineering Command, February 1974.
- 32. U.S. Department of the Navy, <u>Docking Instructions and Routine Work in Drydock</u>, Naval Ships Technical Manual Chapter 9070, Naval Sea Systems Command, Washington, DC, November 1, 1972.
- 33. U.S. Department of the Navy, <u>Environmental Protection Manual</u>, OPNAV Instruction 6240.3, Office of the Chief of Naval Operations, Washington, DC, 1975.

- 34. U.S. Department of the Navy, Final Environmental Impact
 Statement: Abrasive Blasting of Naval Ships Hulls, Naval Sea
 Systems Command, Washington, DC, November 1975.
- 35. U.S. Department of the Navy, "Military Specification: Sand, Sandblast; and Grain, Abrasive Ship Hull Blast Cleaning," Military Specification MIL-S-22262 (Ships), Washington, DC, December 4, 1959.
- 36. U.S. Department of the Navy, "'Mini Scope': Shipalt ARD-193, Industrial Waste Disposal,: Boston Naval Shipyard, Code 2060.2, Boston, Massachusetts, September 12, 1975.
- 37. U.S. Department of the Navy, P-174 Drydock Water Pollution Abatement, Fiscal Year 1979, Military Construction Program, Long Beach Naval Shipyard, Long Beach, California, May 1, 1976.
- 38. U.S. Department of the Navy, "Revised Sandblasting Procedures," Naval Ships' Technical Manual Chapter 9190, Amendment 1, Naval Sea Systems Command, Washington, DC, August 1, 1975.
- 39. U.S. Department of the Navy, A Study of Sediments and Soil Samples From Pearl Harbor Area, Facilities Engineering Command, Civil Engineering Laboratory, Port Hueneme, California, March 1973.
- 40. U.S. Environmental Protection Agency, "Determination of Metals in Salt Water by Atomic Absorption," National Field Investigations Center, Denver, Colorado, 1974.
- 41. U.S. Environmental Protection Agency, <u>Draft</u> <u>Report to the San Diego Regional Water Quality Control Board on Guidelines for the Control of Shipyard Pollutants, National Field Investigations Center, Denver, Colorado, July 1, 1974.</u>
- 42. U.S. Environmental Protection Agency, Rationale for Water Pollution Control at Shipbuilding and Ship Repair Facilities, National Field Investigations Center, Denver, Colorado, August 1974.
- 43. U.S. Environmental Protection Agency, "Study Plan for Shipyard Field Survey, Newport News, Virginia," National Field Investigations Center, Denver, Colorado, May 1974.
- 44. Virginia Institute of Marine Science, Study of Channel Sediments, James River and Hampton Roads Area, Gloucester Point, Virginia, August 1971.

- 45. Carr, Dodd S. and Kronstein, Max, "Anti-fouling Mechanism of Shipbottom Finishes," Modern Paint and Coatings, Palmerton Publishing Co., New York, New York December 1975, pp. 23-27.
- 46. "At Last, A Lasting Bottom Paint," <u>Washington Star News</u>, Washington, DC, April 4, 1976.
- 47. "Bay's Project on Schedule," <u>World Dredging and Marine Construction</u>, Symcon Publishing Co., San Pedro, California, April 1976, p. 8.
- 48. Hassani, Jay J. and Millard, Charles F., "Graving Dock for 300,000-Ton Ships," <u>Civil Engineering</u>, American Society of Civil Engineers, New York, New York, June 1971.
- 49. "Navy Device Soaks Up Spilled Oil," Navy Times, Washington, DC, April 12, 1976, p. 44.
- 50. "New Paint Keeps Barnacles At Bay," Navy Times, Washington, DC, April 19, 1976, p. 3.
- 51. Clark, Allen, "Shipyard Problems with Oily Wastes," Proceedings of the International Conference on Waste Oil Recovery and Reuse, February 12-14, 1974, Information Transfer, Inc., Rockville, Maryland, 1974.
- 52. United States Department of Defense and Department of Commerce, Principal Shipbuilding and Repair Facilities of the United States, Office of the Coordinator for Ship Repair and Conversion, Naval Sea Systems Command, September 1, 1978.